

NIKOLAI TIKHONOVICH KUDRYAVTSEV

M. Ya. Fioshin, S. S. Kruglikov,
G. A. Yagodin, and Yu. M. Polukarov

Soviet and the world's electrochemical science suffered a great loss. N. T. Kudryavtsev, one of the founders of the Soviet school of electroplaters, died on January 24, 1979. He was born on April 10, 1901 in the village of Kochaki, in the Tula district. After graduating from the technological department of G. V. Plekhanov Institute of National Economy, Moscow, in 1926, N. T. Kudryavtsev began his work in the field of electroplating, first as technical leader of the plating shop in one of Moscow's plants, then as co-worker of the L. Ya. Karpov Institute and later in a number of other scientific-research and design organizations.

The basic research interests of N. T. Kudryavtsev were defined already at the end of the 20s and beginning of the 30s; viz., the study of the electrodeposition of zinc, cadmium iron, tin, copper, nickel, chromium, and other metals. N. T. Kudryavtsev thoroughly investigated electrolytic zinc deposition. He examined the conditions under which compact (mat and bright) coatings are produced and determined the origin of the formation of spongy and dendritic zinc deposits at the cathode. This work resulted in a number of new zinc plating baths, including high-performance acidic electrolytes for the coating of wire and ribbon and zincate electrolytes with enhanced throwing power which are successfully used in place of toxic cyanide baths. Another practical application of this work was an electrochemical process for producing zinc powder and the powders of a number of other metals (this work was honored with the State Prize of the USSR in 1949).

N. T. Kudryavtsev made a great contribution to the formulation of modern concepts concerning the mechanism by which bright galvanic coatings are produced. Already at the end of the 30s he successfully used aromatic sulfo derivatives as brighteners in nickel plating baths; at present, these are an imperative component of all modern bright and leveling nickel plating baths.

The problem of improving the uniformity of galvanic coatings on the surface of the parts being coated has occupied N. T. Kudryavtsev's attention for almost half a century. Already at the beginning of the 30s he suggested a new efficient method for quantitatively estimating the throwing power of electrolytes at carbon cathodes. Subsequently N. T. Kudryavtsev performed a detailed analysis of all known methods by which one can examine the macroscopic distribution of current and metal over cathodes and indicated ways to predict the distribution of galvanic coatings over the surface of parts of arbitrary shape and size.

Effects of the microdistribution of electroplated metal in connection with the problem of leveling of microasperities on cathode surfaces for many years were a research subject of N. T. Kudryavtsev. In his work he demonstrated the decisive role of diffusion processes in the solution layer next to the cathode, both for the formation of bright galvanic coatings leveling the microscopic roughness of the surface and for the formation of spongy, dendritic deposits.

Over the last 25 years a great amount of work concerning the electrodeposition of alloys of various metals (tin, lead, bismuth, antimony, cadmium, nickel, chromium, iron, tungsten, cobalt, copper, zinc, palladium, etc.) was carried out under the leadership of N. T. Kudryavtsev. The chief aspects of work in alloy electrodeposition are an understanding of the laws of electrode processes during the joint discharge of metal ions and the examination of the properties of coatings produced. The results of these investigations have given rise to a whole series of new technologies which at present are used in various branches of industry.

N. T. Kudryavtsev paid much attention to the training of highly qualified electrochemical specialists. The fundamental handbook of electroplating which was written by him together with V. I. Lainer and which had three new editions ("Fundamentals of Electroplating")* has no equivalent worldwide, and for several decades now has been the reference book of all specialists in this field. N. T. Kudryavtsev's teaching activity in colleges has continued without a break since 1934. In the D. I. Mendeleev Chemical Engineering Institute of Moscow alone, more than 1500 electrochemical engineers were trained by the Department of Technology of the Electrochemical Industries headed by him; many of these engineers have become prominent production organizers, well-known scientists, doctors, and candidates of science.

*English translation: Israel Programme for Scientific Translations, Jerusalem (1966).

Translated from *Élektrokimiya*, Vol. 15, No. 9, pp. 1420-1421, September, 1979.

N. T. Kudryavtsev was chief of a team of authors who created the textbook "Applied Electrochemistry" published in 1975. He was the author of many textbooks which enjoy reputation and popularity among students.

N. T. Kudryavtsev was an active participant in various conferences, symposia, and meetings, often lectured in the House of Scientific-Technical Propaganda, and was an active member of the board of editors of the journal *Zashchita Metallov*. The work of Nikolai Tikhonovich Kudryavtsev was recognized with a number of high government awards, and he received the prestigious title of a "Honored Scientist and Engineer of the RSFSR."

N. T. Kudryavtsev's memory will forever remain in the hearts of his relatives and friends, colleagues and students.

VALERII ARNOL'DOVICH TYAGAI

S. I. Pekar, O. V. Snitko,
A. V. Gorodyskii, and V. E. Kazarinov

Soviet science suffered a heavy loss. Valerii Arnol'dovich Tyagai, Doctor of Chemical Sciences, a talented young scientist who had left a bright trace in Soviet science, head of the physical chemistry section of the Institute of Semiconductors, Academy of Sciences of the UkrSSR, member of the Council of Experts of the Institute of General and Inorganic Chemistry, Academy of Sciences of the UkrSSR, and chairman of the Section on the Kinetics and Thermodynamics of Electrode Processes of the Republic's Science Council, suddenly died on February 1, 1979.

V. A. Tyagai was born on December 19, 1938 in Kiev. After graduating from Kiev Polytechnic Institute he started graduate work at the Institute of Electrochemistry, Academy of Sciences of the USSR. Here he completed his first projects, which pioneered in the field of semiconductor electrochemistry and were the subject of the candidate's dissertation successfully defended in 1964. After the graduate work, V. A. Tyagai was leader, first of a group, then of a laboratory and section in the Institute of Semiconductors, Academy of Sciences of the UkrSSR and at the same time head of a group of research workers in the Institute of General and Inorganic Chemistry, Academy of Sciences of the UkrSSR.

V. A. Tyagai started a number of new lines of research in the physical chemistry of semiconductors. He was the first to study fluctuation phenomena at metal and semiconductor electrodes and showed that they contain important information about the microprocesses in electrochemical reactions; he experimentally verified the theory of electrochemical noise.

V. A. Tyagai did important research in the surface physics and electrochemistry of semiconductors and on electrooptical effects in semiconductors, determined basic band structure parameters of a wide selection of semiconductor crystals, and did theoretical calculations of electoreflectance and quantum-mechanical effects at semiconductor surfaces.

Valerii Arnol'dovich Tyagai had an unusually wide scientific horizon: from theoretical physics and chemistry to engineering realizations. He was the author of more than 100 scientific papers and four patents; His scientific activity was reflected in the proceedings of numerous symposia and conferences, both in our country and abroad.

The scientific ideas of Valerii Arnol'dovich Tyagai will be developed by his co-workers, colleagues, and friends, by all who had the fortune of working close to him.